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THE MUSICAL TIMES,
And Singing Class Circular.
FEBRUARY 1st, 1863.

A DRAUGHT FOR THE PARTICULAR HISTORY OF PHONICS: OR, THE DOCTRINE OF SOUND AND HEARING.

From Lord Bacon's "Sylva Sylvarum."

(Concluded from page 372.)

1. Visible species seem to be emissions of the rays of light from the visible object, almost in the manner of odours, only that they are more incorporeal, but audible species seem to participate more of local motion, like percussions or impressions made upon the air. So that, as all bodies appear to operate two ways—viz., either by the communication of their natures, or by the impressions and signatures of their motions, the diffusion of visible species seems to partake more of the former, and audible species of the latter. 2. The species of audibles seem to be more manifestly carried through the air than the species of visibles, as a contrary strong wind will not hinder the sight, though it does the hearing. 3. One difference betwixt visible and audible species is, above all others, very remarkable, as that whereon many smaller differences depend—viz., visibles are carried in right lines, and audibles in curves. Whence it is that visibles do not intermix and confound one another, as sounds do. And hence the solidity of bodies does not much hinder the sight, provided the bodies be clear, and the pores in a right line, as in glass, crystal, diamonds, water, &c., but a thin scarf or handkerchief, though bodies nothing so near solid hinder vision, whilst such porous bodies do not much hinder the hearing, which solid bodies almost stop, or, at the least, weaken. Hence also small glasses suffice for the reflection of visibles, but greater spaces are required to the reverberation of audibles. 4. Visible objects are seen farther than sounds are heard—that is, in proportion to their magnitude; for otherwise a great sound is heard farther than a small body can be seen. 5. Visibles generally require some distance between the object and the eye, but in audibles the nearer the sound is to the sensory the stronger it proves. But in this there may be a double error, the one because vision depends upon light, and any thing that touches the pupil of the eye all over, excludes the light. For I had it from a very credible person who was himself cured of a cataract, that while the silver needle removed the film of the cataract, he never saw anything more clear or perfect than that white needle; no doubt because the needle was less than the pupil of the eye, and so eclipsed not the light from it. The other error may be because the object of sight strikes upon he pupil of the eye directly without any interception, whereas the cavity of the ear keeps off the sound a little from the organ, so that there is some distance required in both. 6. Visibles are sooner carried to the sense than audibles, as appears in thunder and lightning, the flash and report of a gun, &c. I conceive also that the species of audibles hang longer in the air than those of visibles; for although even visible species hang some time, as when rings are twirled round, they show like spheres; and a fire-brand carried swiftly along leaves a train of light behind it, &c., yet sounds seem to remain much longer, because they are carried up and down with the winds; and because the distance of the time is great betwixt the flash of a cannon seen and its report heard, twenty miles off. 7. There are no objects found so odious and ungrateful to the sense in visibles as in audibles; for odious sights rather displease, as they excite the memory of odious things than by the immediate object itself. Whence such sights in pictures are not very disagreeable, but in audibles the filing of a saw is so offensive as to set the teeth on edge, and the ear is presently shocked at harsh discords in music. 8. In visibles, if you come suddenly out of great light into the dark, or out of the dark into a glaring light, the eye is dazzled for a time, and the sight confused; but whether there is any such effect after great sounds, or after a deep silence, should be inquired. 'Tis an old tradition, that those who dwell near the cataracts of the Nile are deaf; but we find no such effect in engineers, millers, and those that live upon bridges. 9. It seems the impression of colour is so weak, as not to operate but by a cone of direct rays, or right lines, whereof the basis is the object, and the vertical point in the eye, whence there is corradiation and conjunction of beams; and these beams so sent forth are not sufficient to produce the like borrowed, or secondary beams, without reflection; for the beams pass and give little tincture to the air adjacent, otherwise we should see colours out of a right line. But though this happens in colours, it is not so in the body of light; for when there is a screen between the candle and the eye, yet the light passes the paper; for example, when a person is writing by candlelight, so that the light is seen where the body of the flame is not seen, and where any colour would not be seen that was placed where the body of the flame is. I judge that sound is of this latter nature, for when two persons converse with a wall betwixt them, the voice is not, perhaps, only the original sound which passes in an arch-line; but the sound that passes above the wall, in a right line, may produce the like motion round about it, as the first did, though weaker.

SECTION XXI.

OF THE SYMPATHY, OR ANTIPATHY, OF SOUNDS WITH ONE ANOTHER.

All concords and discords of music may be aptly called the sympathies and antipathies of ounds; so in that music termed broken, or consort-music, some consorts of instruments are sweeter than others—a thing not hitherto sufficiently observed. Thus the Irish harp and the base viol consort well; so do the recorder and stringed instruments; organs and the voice, &c.; but virginals and the lute, the Welch harp and Irish harp, or the voice and pipes alone, agree not so well. But for the melioration of music, with regard to exquisite consorts, there is much matter left for trial and inquiry.

'Tis a common observation that if a lute or viol be laid upon its back, with a small straw upon one of the strings, and another lute, or viol, be laid by it, and the unison to the former string be struck in the latter, it will make that string move, as appears both directly to the eye, and by the effect of making the straw fall off. And the like happens if the diapason, or eighth to that string, be struck, either in the same lute or viol, or in others lying by; but in none of these is there any report of sound to be discovered, but only motion. It has been advised that a viol should have a set of wire-strings below, as close to the belly as a lute, and then the gut-strings mounted upon a bridge, as in ordinary viols, so that by this means the upper strings being struck, should make the lower resound by sympathy, and thus meliorate the music. If this succeed, sympathy will appear to operate as well by the report of sound as by motion. But this device I conceive of no use, because the upper strings, which are stopped in great variety, cannot maintain a diapason with the lower, which are never stopped; but if it has any advantage it must be seen in instruments that have no stops, as virginals and harps, wherein trial may be made of two rows of strings, distant the one from the other.

The experiments of sympathy may, perhaps, be transferred from stringed instruments to others; as, if there were two bells in unison in one steeple, to try whether striking the one would move the other, more than if it were a different cord; and so in pipes of equal bore and sound, to try whether a light straw or feather would move in one pipe, when the other is blown in unison with it.

It seems both to the ear and eye that the instrument of sense has a similitude or sympathy with that which gives reflection; thus the pupil of the eye is like crystal, glass, or water; and the ear, a sinous cavity, with a hard bone, to stop and reverberate the sound, like the places of echo.

SECTION XXII.

OF THE MEANS OF HINDERING, OR IMPROVING THE HEARING.

When a man yawns he cannot hear so well, the membrane of the ear being then extended, so as rather to repel the sound than attract it. We hear better when we hold our breath than otherwise, whence, in all listening, men hold their breath; for in all expiration the motion is outwards, and therefore rather drives away the voice than draws it in. Besides, in all labour that requires strength we hold the breath, and listening after any sound that is heard with difficulty seems a kind of labour.

Let it be tried, for a help to hearing, to make an instrument like a funnel, the length of six inches or more, the narrow part whereof may fit the hole of the ear, and the broader end swell much larger, like a bell. Let the narrow end of it be applied close to the ear, and observe whether a sound will not be heard distinctly at a greater distance than without this instrument. I have been told that in Spain they use an instrument which, applied to the ear, helps those that are thick of hearing.

Though the lips be shut close, there is a murmur yielded by the roof of the mouth, as in dumb men; but if the nostrils are likewise stopped, no such murmur can be made, unless in the bottom of the palate towards the throat. Whence it appears that a sound in the mouth, except such as that just mentioned, passes from the palate through the nostrils, if the mouth be stopped.

SECTION XXIII.

THE SPIRITUAL AND FINE NATURE OF SOUNDS.

The repercussion of sounds, which we call echo, is a great argument of their spiritual nature, for if it were corporeal, the repercussion should be caused in the same manner, and by the like instruments, as the original sound: but we see what a number of exquisite instruments must concur in speaking; whereas there is no such things concerned in the returning of words, but only a plain stop and repercussion.

The requisite differences of articulate sounds carried along in the air, show that they cannot be signatures or impressions in the air; for though seals make excellent impressions, and though sounds in their first generation may be conceived as impressed, yet the propagation and continuance of them, without any new sealing, shows them not to be impressed.

All sounds are suddenly made, and suddenly perish; but neither this, nor the exquisite differences of them, is so wonderful, because the quaverings and warblings in lutes and pipes are as quick; and the tongue, though but a gross instrument, makes no fewer motions in speech than there are letters in all the words it utters. But that sounds should be so speedily generated, and carried so far every way, in so short a time, is more surprising. For example, if a man speak aloud in the middle of a field, he may be heard a furlong round him, and that in articulate sounds, entire, in every little portion of the air; and all this shall be done in less than a minute.

The sudden generation and destruction of sounds must proceed from hence, either that the air suffers some force by sound, and then restores itself, as water does, or that the air readily imbibes the sound as grateful, but cannot maintain it; for the air seems to have a secret appetite of receiving sound at first, but then other gross and more material qualities presently suffocate it, like flame, which is suddenly generated but instantly extinguished, by the enmity of the air, or other ambient bodies.

Sounds in general are divided into—1, musical and immusical; 2, trebler and bass; 3, flat and sharp; 4, soft and loud; 5, external and internal; 6, clear, harsh, and purling; and 7, articulate and inarticulate.

We have taken some pains in this inquiry about sound, not only because it is a secret and incorporeal quality in nature, but because we were willing, in our first attempt towards a just natural and experimental history, to give an example of a tolerably exact inquiry, intending to do the like in another article or two; being desirous that men should thoroughly perceive what a severe and rigid thing every true inquiry into nature must necessarily be, and hence accustom themselves to enlarge their minds by the light of particulars to the ample measure of the universe, and not contract the universe to the narrow measure of their own minds.

If farther directions be wanted for the conduct of inquirers, the reader may find them in the second part of the "Novum Organum."

Brief Chronicle of the last Month.

Aigburth.—The choral society, which was formed some months ago, and placed under the guidance of Mr. Harrison, organist of St. Ann's, gave their first concert on Tuesday evening, the 20th ult., in aid of the Lancashire Fund. The programme was judiciously chosen. The principals were Miss Monkhouse, Mr. Foulkes, and Mr. Taylor. The secretary of the society has been enabled to pay over £10 12s. 6d. to the Relief Fund.

Alloa.—On the 8th of January, a concert took place at the Corn Exchange, in aid of the poor of the town. The performers included Messrs. Cowie, McLauchlan, Melville, and Stirling; the Volunteer Band, and the Harmonic Society, numbering about fifty voices. Mr. D. Melville conducted.

Armley.—A concert took place in the Church Schoolroom on December 26th, to defray part of the expenses incurred by the new organ in the Church. The concert was given by the choir, under the direction of the choirmaster, Mr. Pickersgill; Mr. Grice, from York Cathedral, and Mr. Roberts, also assisted on this occasion. M. John Varley Roberts, the organist, presided at the pianoforte.

Bedale.—On Wednesday, January 7th, a morning and evening concert were given in the Assembly Rooms, Town Hall, in aid of the Lancashire Relief Fund. The performers, who were amateurs, consisted of the Bedale Church Choir, assisted by several ladies and gentlemen in the neighbourhood. The concert was conducted by Mr. Speight, organist of the parish church. Contribution to the fund, £50.

Belfast.—Dr. Chipp gave a performance on the 6th ult., in the Ulster Hall, upon the great organ. The music selected comprised the Overture to *Masaniello*, Beethoven's *Adelaida*, Mendelssohn's Sonata, No. 1, a cavatina from *Der Freyschutz*, and the Coronation Anthem.——On the 6th ult. a concert of sacred music was given in the School-room of Trinity Church, by the choir, assisted by Messrs. Spackman and Tasney, and several members of the Anacreontic and Classical Harmonist Societies. Mr. A. McMahon presided at the harmonium.——The members of the Castle Caulfield Church Choir gave a concert in the School-room, for the benefit of the organist, on Friday, the 9th ult.——A soiree musicale took place at Shane's Castle, on Wednesday, the 14th ult. The performance was both vocal and instrumental; and the executants included the host, the Rev. W. O'Neill, and the members of his family. Professor Stewart presided at the organ; and Mr. Robinson conducted.

Bristol.—The members of the City Choral Society gave their first concert at the Broadmead-rooms on New Year's day. The programme contained a miscellaneous selection of secular music. The principal vocalist was Miss Emily Spiller, who was very successful in her performance of the ballad, "Britannia, the queen of the seas." The instrumentalists were Miss A. Bishop, Mr. J. Bishop, and Mr. Priest. Conductor, Mr. Macfarlane.

Camberwell.—The choir of Emmanuel assembled at the Church on Christmas Eve at midnight, and, accompanied by the precentor, organist, and one of the churchwardens, visited in turn the residences of the Incumbent, the Curate, and principal parishioners; at each place a selection of carols was performed. The choir separated at half-past three on Christmas morning.

Cambridge.—The *Messiah* was performed in the new Assembly Room on December 23rd, by the Singing Class of the Church of England Society, assisted by a numerous band of professionals and amateurs. Conductor, Mr. Amps, M.A; Leader, Mr. H. Ingram. The solos were sung by Mrs. J. Bailey, and Messrs. Bilton, Robinson, and Ward. The profits arising therefrom were to be given to the Lancashire Relief Fund. Great credit is due to Mr. C. Penson for successfully managing this concert. The sum of £23 3s. 6d. has since been paid to the Mayor, on behalf of the Fund.—On January 5th, the Eighth Cambridgeshire Rifle Band gave a concert for the same laudable object. The solo singers were Mrs. Bailey, and Messrs. Beale and Machin. A duet for pianoforte and horn, by Schumann, was performed by the Rev. J. R. Lunn and Mr. J. Large, Band-master; Messrs. C. Sippel (flute), H. Ingram and Mons. Venua (violins), were the other solo instrumentalists. Contributions to the fund, £2 13s. 6d.

Canterbury.—The Harmonic Society had an open night on the 7th ult., at the George Hotel, when they were assisted by Messrs. Plant, Newsome, and Gough The music consisted of songs, duets, and glees.

Cheltenham.—On Tuesday, the 13th ult, an amateur concert took place at the Assembly-rooms, in aid of the Lancashire Distress Fund. Mr. Frederick Smith officiated as accompanyist, and Mr. Uglow conducted the concert. The performers were in all respects equal to the task; and great credit is due to them for the manner in which they executed the music. A sum of about £200 will accrue to the Fund from this concert.

Chobham.—A concert was given on the 7th ult., by the Choral Association of this place. Mr. Samuel Gee conducted.

Clifton.—On the 26th of December, an oratorio performance was given at the Victoria-rooms, by the Sacred Harmonic Society. The programme included Mendelssohn's *Hymn of Praise*, and a selection from *Solomon*, *Judas Maccabœus*, and *Samson*. The orchestra contained above 160 performers; and the principal singers were Mrs. P. Smith, Madame Dolby, and Mr. Sims Reeves. Mr. P. Smith conducted.

Clydach (Swansea Vale).—On the 17th of January, the *Messiah* was performed by the Swansea Valley Choral Association, (consisting of 300 members) at Hebron Chapel, under the management of Mr. W. Griffiths.

Cumber (County Devon).—On Wednesday, December 31st, 1862, a soirée and concert was held in the Meeting-house of the Remonstrant congregation.

Dudley.—The Catholic Re-union took place in the Rose Hill School-room on the 30th of December. From six to seven hundred persons were present. Mrs. Bunce, Mr. Short, and Mr. Hillman were amongst the performesr.